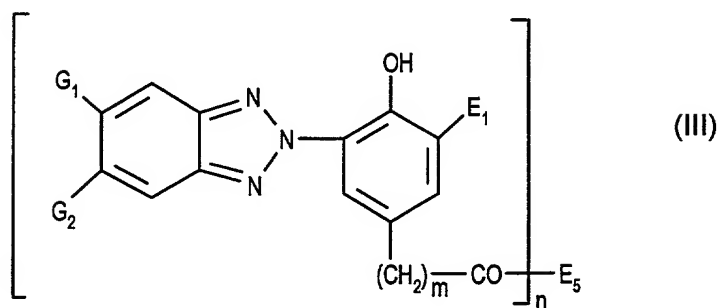
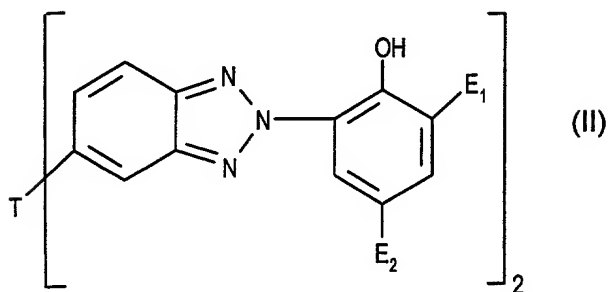
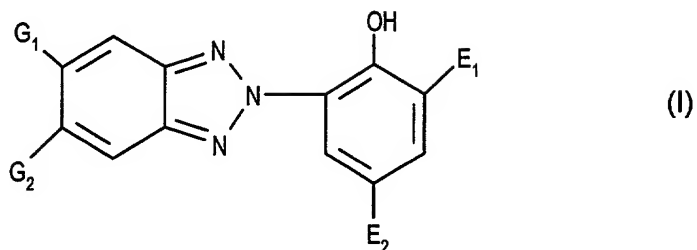


# WHAT IS CLAIMED IS:

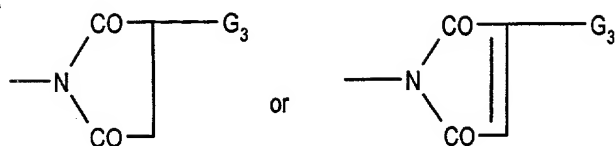
1. A compound of formula I, II or III



wherein

G<sub>1</sub> is hydrogen or halogen,

G<sub>2</sub> is hydrogen, cyano, perfluoroalkyl of 1 to 12 carbon atoms, halogen, -CO-G<sub>3</sub>, -COOG<sub>3</sub>, -CONHG<sub>3</sub>, -CON(G<sub>3</sub>)<sub>2</sub>, E<sub>3</sub>SO-, E<sub>3</sub>SO<sub>2</sub>-, nitro, -P(O)(C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>, -P(O)(OG<sub>3</sub>)<sub>2</sub>,

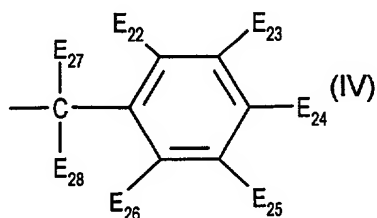


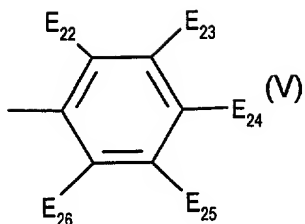
$G_3$  is hydrogen, straight or branched chain alkyl of 1 to 24 carbon atoms, straight or branched chain alkenyl of 2 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, phenyl, or said phenyl or said phenylalkyl substituted on the phenyl ring by 1 to 4 alkyl of 1 to 4 carbon atoms,

$E_1$  is hydrogen, straight or branched chain alkyl of 1 to 24 carbon atoms, straight or branched chain alkenyl of 2 to 24 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, phenyl, or said phenyl or said phenylalkyl substituted on the phenyl ring by 1 to 4 alkyl of 1 to 4 carbon atoms; or  $E_1$  is alkyl of 1 to 24 carbon atoms substituted by one or two hydroxy groups;

or  $E_1$  is alkyl of 1 to 24 carbon atoms, alkenyl of 2 to 18 carbon atoms, said alkyl or said alkenyl substituted by one or more  $-OCOE_{11}$ ,  $-OE_4$ ,  $-NCO$ ,  $-NHCOE_{11}$ , or  $-NE_7E_8$ , or mixtures thereof, where  $E_4$  is straight or branched chain alkyl of 1 to 24 carbon atoms or straight or branched chain alkenyl of 2 to 18 carbon atoms; or said alkyl or said alkenyl interrupted by one or more  $-O-$ ,  $-NH-$  or  $-NE_4-$  groups or mixtures thereof and which can be unsubstituted or substituted by one or more  $-OH$ ,  $-OE_4$  or  $-NH_2$ , or mixtures thereof;

or  $E_1$  is a group of formula IV or V





where

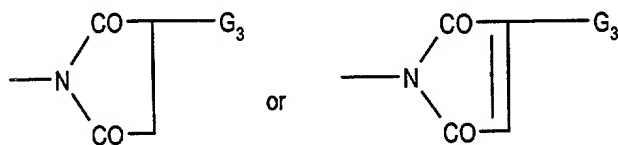
$E_{27}$  and  $E_{28}$  are independently alkyl of 1 to 18 carbon atoms, or cycloalkyl of 5 to 12 carbon atoms;

$E_{22}$ ,  $E_{23}$ ,  $E_{24}$ ,  $E_{25}$  and  $E_{26}$  are independently hydrogen, halogen, straight or branched alkyl of 1 to 18 carbon atoms, alkenyl of 2 to 18 carbon atoms, said alkyl or said alkenyl substituted by one or more halogen,  $-\text{OCOE}_{11}$ ,  $-\text{OE}_4$ ,  $-\text{NCO}$ ,  $-\text{NHCOE}_{11}$  or  $-\text{NE}_7\text{E}_8$ , or mixtures thereof, where  $E_4$  is straight or branched chain alkyl of 1 to 24 carbon atoms or straight or branched chain alkenyl of 2 to 18 carbon atoms; or said alkyl or said alkenyl interrupted by one or more  $-\text{O}-$ ,  $-\text{NH}-$  or  $-\text{NE}_4-$  groups or mixtures thereof and which can be unsubstituted or substituted by one or more  $-\text{OH}$ ,  $-\text{OE}_4$  or  $-\text{NH}_2$ , or mixtures thereof; or

$E_{22}$ ,  $E_{23}$ ,  $E_{24}$ ,  $E_{25}$  and  $E_{26}$  are independently phenyl,  $-\text{OH}$ ,  $-\text{OCOE}_{11}$ ,  $-\text{OE}_{29}$ ,  $-\text{NCO}$ ,  $-\text{NHCOE}_{11}$  or  $-\text{NE}_7\text{E}_8$ , cyano, nitro, perfluoroalkyl of 1 to 12 carbon atoms,  $-\text{COG}_3$ ,  $-\text{COOG}_3$ ,  $-\text{CON}(\text{G}_3)_2$ ,  $-\text{CONHG}_3$ ,  $\text{E}_3\text{S}-$ ,  $\text{E}_3\text{SO}-$ ,  $\text{E}_3\text{SO}_2-$ ,  $-\text{P}(\text{O})(\text{C}_6\text{H}_5)_2$ ,  $-\text{P}(\text{O})\text{OG}_3$ ,  $-\text{SO}_2-\text{X}_1-\text{E}_{29}$ ;

$\text{X}_1$  is  $-\text{O}-$ ,  $-\text{NH}-$  or  $-\text{NE}_4-$ ;

$\text{E}_{29}$  is straight or branched chain alkyl of 1 to 24 carbon atoms, straight or branched chain alkenyl of 2 to 18 carbon atoms, said alkyl or said alkenyl substituted by one or more  $-\text{OH}$ ,  $-\text{OCOE}_{11}$ ,  $-\text{OE}_4$ ,  $-\text{NCO}$ ,  $-\text{NHCOE}_{11}$ ,  $-\text{NE}_7\text{E}_8$ , phthalimido,



or mixtures thereof, where  $E_4$  is straight or branched chain alkyl of 1 to 24 carbon atoms or alkenyl of 2 to 18 carbon atoms; or said alkyl or said alkenyl interrupted by one or more -O-, -NH- or -NE<sub>4</sub>- groups or mixtures thereof and which can be unsubstituted or substituted by one or more -OH, -OE<sub>4</sub> or -NH<sub>2</sub>, or mixtures thereof; or  $E_{29}$  is phenyl or phenylalkyl of 7 to 15 carbon atoms, or said phenyl or said phenylalkyl substituted by one to three alkyl groups of 1 to 4 carbon atoms;

$E_2$  is straight or branched alkyl chain of 1 to 24 carbon atoms, straight or branched chain alkenyl of 2 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, phenyl, or said phenyl or said phenylalkyl substituted on the phenyl ring by one to three alkyl of 1 to 4 carbon atoms; or  $E_2$  is alkyl of 1 to 24 carbon atoms or said alkenyl of 2 to 18 carbon atoms substituted by one or more -OH, -OCOE<sub>11</sub>, -OE<sub>4</sub>, -NCO, -NHCOE<sub>11</sub> or -NE<sub>7</sub>E<sub>8</sub>, or mixtures thereof, where  $E_4$  is straight or branched chain alkyl of 1 to 24 carbon atoms or alkenyl of 2 to 18 carbon atoms; or said alkyl or said alkenyl interrupted by one or more -O-, -NH- or -NE<sub>4</sub>- groups or mixtures thereof and which can be unsubstituted or substituted by one or more -OH, -OE<sub>4</sub> or -NH<sub>2</sub> groups or mixtures thereof, or  $E_2$  is a group of formula IV or formula V as described above;

$n$  is 1 or 2,

when  $n$  is 1,  $E_5$  is OE<sub>6</sub> or NE<sub>7</sub>E<sub>8</sub>, or

$E_5$  is -PO(OE<sub>12</sub>)<sub>2</sub>, -OSi(E<sub>11</sub>)<sub>3</sub> or -OCO-E<sub>11</sub>,

or straight or branched chain C<sub>1</sub>-C<sub>24</sub>alkyl which is interrupted by -O-, -S- or -NE<sub>11</sub> and which can be unsubstituted or substituted by -OH or -OCO-E<sub>11</sub>, C<sub>5</sub>-C<sub>12</sub> cycloalkyl which is unsubstituted or substituted by -OH, straight chain or branched C<sub>2</sub>-C<sub>18</sub>alkenyl which is unsubstituted or substituted by -OH, C<sub>7</sub>-C<sub>15</sub>aralkyl, -CH<sub>2</sub>-CHOH-E<sub>13</sub> or glycidyl,

$E_6$  is hydrogen, straight or branched chain C<sub>1</sub>-C<sub>24</sub>alkyl which is unsubstituted or substituted by one or more OH, OE<sub>4</sub> or NH<sub>2</sub> groups, or -OE<sub>6</sub> is -(OCH<sub>2</sub>CH<sub>2</sub>)<sub>w</sub>OH or -(OCH<sub>2</sub>CH<sub>2</sub>)<sub>w</sub>OE<sub>21</sub> where  $w$  is 1 to 12 and  $E_{21}$  is alkyl of 1 to 12 carbon atoms,

$E_7$  and  $E_8$  are independently hydrogen, alkyl of 1 to 18 carbon atoms, straight or branched chain C<sub>3</sub>-C<sub>18</sub>alkyl which is interrupted by -O-, -S- or -NE<sub>11</sub>-, straight or branched chain

alkenyl of 2 to 18 carbon atoms, C<sub>5</sub>-C<sub>12</sub>cycloalkyl, C<sub>6</sub>-C<sub>14</sub>aryl or C<sub>1</sub>-C<sub>3</sub>hydroxylalkyl, or E<sub>7</sub> and E<sub>8</sub> together with the N atom are a pyrrolidine, piperidine, piperazine or morpholine ring, or

E<sub>5</sub> is -X-(Z)<sub>p</sub>-Y-E<sub>15</sub>

wherein

X is -O- or -N(E<sub>16</sub>)-,

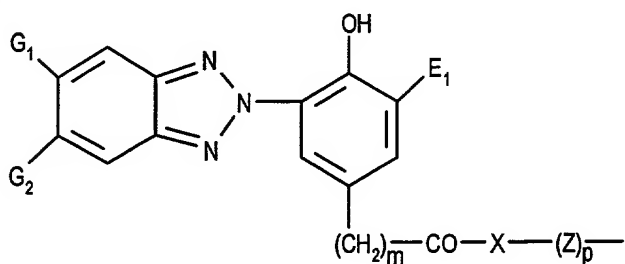
Y is -O- or -N(E<sub>17</sub>)-,

Z is C<sub>2</sub>-C<sub>12</sub>-alkylene, C<sub>4</sub>-C<sub>12</sub>-alkylene interrupted by one to three nitrogen atoms, oxygen atoms or a mixture thereof, or is C<sub>3</sub>-C<sub>12</sub>-alkylene, butenylene, butynylene, cyclohexylene or phenylene, each substituted by a hydroxyl group,

m is zero, 1 or 2,

p is 1, or p is also zero when X and Y are -N(E<sub>16</sub>)- and -N(E<sub>17</sub>)-, respectively,

E<sub>15</sub> is a group -CO-C(E<sub>18</sub>)=C(H)E<sub>19</sub> or, when Y is -N(E<sub>17</sub>)-, forms together with E<sub>17</sub> a group -CO-CH=CH-CO-, wherein E<sub>18</sub> is hydrogen or methyl, and E<sub>19</sub> is hydrogen, methyl or -CO-X-E<sub>20</sub>, wherein E<sub>20</sub> is hydrogen, C<sub>1</sub>-C<sub>12</sub>-alkyl or a group of the formula

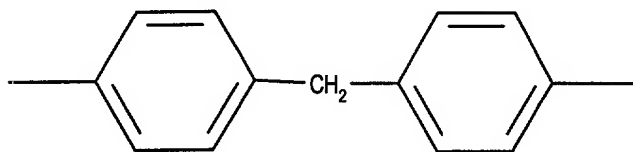


wherein the symbols E<sub>1</sub>, G<sub>2</sub>, X, Z, m and p have the meanings defined above, and E<sub>16</sub> and E<sub>17</sub> independently of one another are hydrogen, C<sub>1</sub>-C<sub>12</sub>-alkyl, C<sub>3</sub>-C<sub>12</sub>-alkyl interrupted by 1 to 3 oxygen atoms, or is cyclohexyl or C<sub>7</sub>-C<sub>15</sub>aralkyl, and E<sub>16</sub> together with E<sub>17</sub> in the case where Z is ethylene, also forms ethylene,

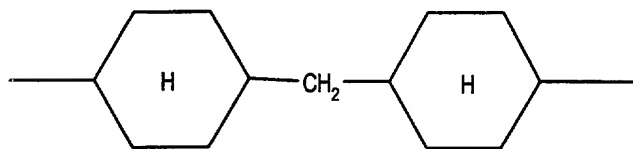
when n is 2, E<sub>5</sub> is one of divalent radicals -O-E<sub>9</sub>-O- or -N(E<sub>11</sub>)-E<sub>10</sub>-N(E<sub>11</sub>)-,

E<sub>9</sub> is C<sub>2</sub>-C<sub>8</sub>alkylene, C<sub>4</sub>-C<sub>8</sub>alkenylene, C<sub>4</sub>alkynylene, cyclohexylene, straight or branched chain C<sub>4</sub>-C<sub>10</sub>alkylene which is interrupted by -O- or by -CH<sub>2</sub>-CHOH-CH<sub>2</sub>-O-E<sub>14</sub>-O-CH<sub>2</sub>-CHOH-CH<sub>2</sub>-,

E<sub>10</sub> being straight or branched chain C<sub>2</sub>-C<sub>12</sub>alkylene which may be interrupted by -O-, cyclohexylene, or

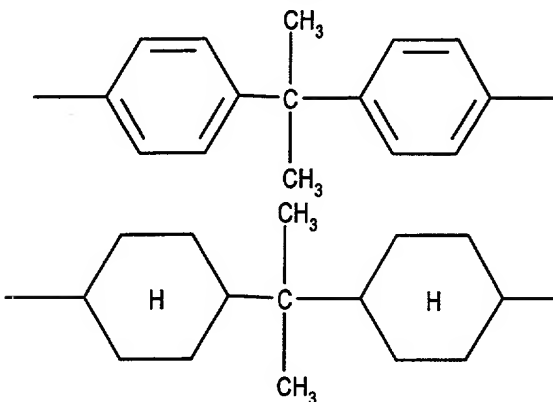


or

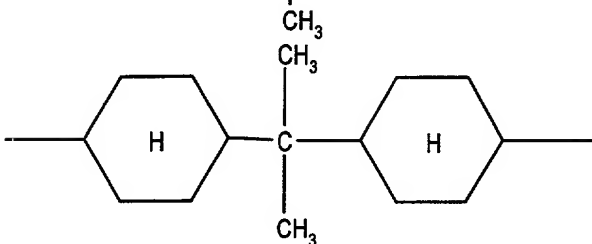


or E<sub>10</sub> and E<sub>11</sub> with the two nitrogen atoms form a piperazine ring,

E<sub>14</sub> is straight or branched chain C<sub>2</sub>-C<sub>8</sub>alkylene, straight or branched chain C<sub>4</sub>-C<sub>10</sub>alkylene which is interrupted by -O-, cycloalkylene, arylene or



or



E<sub>11</sub> is hydrogen, straight or branched chain C<sub>1</sub>-C<sub>18</sub>alkyl, C<sub>5</sub>-C<sub>12</sub>cycloalkyl, straight or branched chain C<sub>2</sub>-C<sub>18</sub>alkenyl, C<sub>6</sub>-C<sub>14</sub>aryl or C<sub>7</sub>-C<sub>15</sub>aralkyl,

E<sub>12</sub> is straight or branched chain C<sub>1</sub>-C<sub>18</sub>alkyl, straight or branched chain C<sub>3</sub>-C<sub>18</sub>alkenyl, C<sub>5</sub>-C<sub>10</sub>cycloalkyl, C<sub>6</sub>-C<sub>16</sub>aryl or C<sub>7</sub>-C<sub>15</sub>aralkyl,

E<sub>13</sub> is hydrogen, straight chain or branched C<sub>1</sub>-C<sub>18</sub>alkyl which is substituted by -PO(OE<sub>12</sub>)<sub>2</sub>, phenyl which is unsubstituted or substituted by OH, C<sub>7</sub>-C<sub>15</sub>aralkyl or -CH<sub>2</sub>OE<sub>12</sub>,

E<sub>3</sub> is alkyl of 1 to 20 carbon atoms, hydroxyalkyl of 2 to 20 carbon atoms, alkenyl of 3 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, aryl

of 6 to 10 carbon atoms or said aryl substituted by one or two alkyl of 1 to 4 carbon atoms or 1,1,2,2-tetrahydroperfluoroalkyl where the perfluoroalkyl moiety is of 6 to 16 carbon atoms,

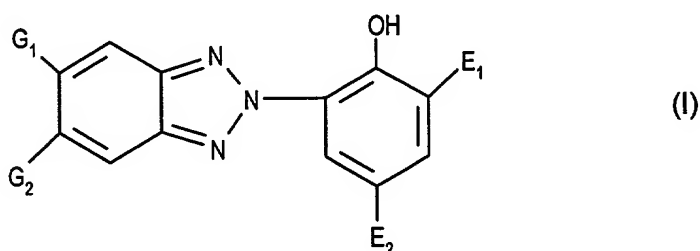
T is -SO-, -SO<sub>2</sub>-, -SO-E-SO-, -SO<sub>2</sub>-E-SO<sub>2</sub>-, -CO-, -CO-CO-, -CO-CH<sub>2</sub>-CO-, -CO-E-CO-, -COO-E-OCO- or -CO-NG<sub>5</sub>-E-NG<sub>5</sub>-CO-,

where E is alkylene of 2 to 12 carbon atoms, cycloalkylene of 5 to 12 carbon atoms, or alkylene interrupted or terminated by cyclohexylene of 8 to 12 carbon atoms;

G<sub>5</sub> is G<sub>3</sub> or hydrogen, and

with the proviso that at least one of E<sub>1</sub> and E<sub>2</sub> is a group of formula V where E<sub>22</sub> to E<sub>26</sub> are not each hydrogen; where if 1 to 4 of E<sub>22</sub> to E<sub>26</sub> are each hydrogen, the remaining E<sub>22</sub> to E<sub>26</sub> groups are not each alkyl.

## 2. A compound of formula I according to claim 1



wherein

G<sub>1</sub> is hydrogen,

G<sub>2</sub> is hydrogen, cyano, -CF<sub>3</sub>, fluoro, chloro, -CO-G<sub>3</sub>, -COOG<sub>3</sub> or E<sub>3</sub>SO<sub>2</sub>-,

G<sub>3</sub> is hydrogen, straight or branched chain alkyl of 1 to 24 carbon atoms, straight or branched chain alkenyl of 2 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, phenyl, or said phenyl or said phenylalkyl substituted on the phenyl ring by 1 to 4 alkyl of 1 to 4 carbon atoms,

E<sub>1</sub> is a group of formula IV or formula V wherein E<sub>22</sub>-E<sub>26</sub> are independently hydrogen, alkyl of 1 to 12 carbon atoms, straight or branched chain alkenyl of 2 to 18 carbon atoms, OH, cyano, -OE<sub>29</sub>, chloro, fluoro, -OCOE<sub>11</sub>, -CF<sub>3</sub>, -COOG<sub>3</sub>, E<sub>3</sub>S-, E<sub>3</sub>SO<sub>2</sub>- or -SO<sub>2</sub>-NH-E<sub>29</sub>;

E<sub>27</sub> and E<sub>28</sub> are methyl;

E<sub>2</sub> is straight or branched alkyl chain of 1 to 24 carbon atoms, straight or branched chain alkenyl of 2 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, phenyl, or said phenyl or said phenylalkyl substituted on the phenyl ring by 1 to 3 alkyl of 1 to 4 carbon atoms; or E<sub>2</sub> is said alkyl of 1 to 24 carbon atoms or straight or branched alkenyl of 2 to 18 carbon atoms; or said alkyl or said alkenyl substituted by one or more -OH, -OCOE<sub>11</sub>, -OE<sub>4</sub>, -NCO, -NHCOE<sub>11</sub> or -NE<sub>7</sub>E<sub>8</sub>, or mixtures thereof, where E<sub>4</sub> is straight or branched chain alkyl of 1 to 24 carbon atoms or straight or branched chain alkenyl of 2 to 18 carbon atoms; or said alkyl or said alkenyl interrupted by one or more -O-, -NH- or -NE<sub>4</sub>- groups or mixtures thereof and which can be unsubstituted or substituted by one or more -OH, -OE<sub>4</sub> or -NH<sub>2</sub> groups or mixtures thereof; or E<sub>2</sub> is a group of formula IV or formula V wherein E<sub>22</sub>-E<sub>26</sub> are independently hydrogen, alkyl of 1 to 12 carbon atoms, straight or branched chain alkenyl of 2 to 18 carbon atoms, OH, cyano, -OE<sub>29</sub>, chloro, fluoro, -OCOE<sub>11</sub>, -CF<sub>3</sub>, -COOG<sub>3</sub>, E<sub>3</sub>S-, E<sub>3</sub>SO<sub>2</sub>- or -SO<sub>2</sub>-NH-E<sub>29</sub>;

E<sub>3</sub> is alkyl of 1 to 20 carbon atoms, hydroxyalkyl of 2 to 20 carbon atoms, alkenyl of 3 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, aryl of 6 to 10 carbon atoms or said aryl substituted by one or two alkyl of 1 to 4 carbon atoms or 1,1,2,2-tetrahydroperfluoroalkyl where the perfluoroalkyl moiety is of 6 to 16 carbon atoms; and where E<sub>11</sub> and E<sub>29</sub> are as defined above.

3. A compound of formula I according to claim 1 which is



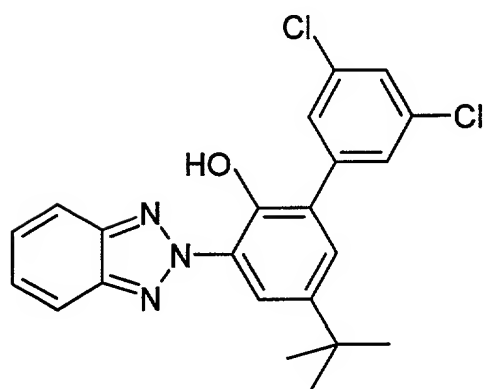
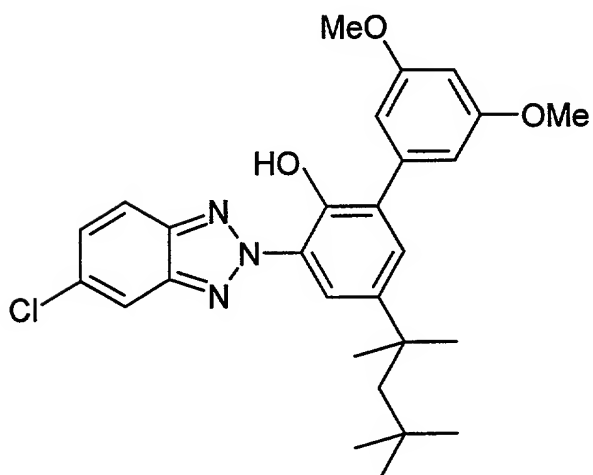
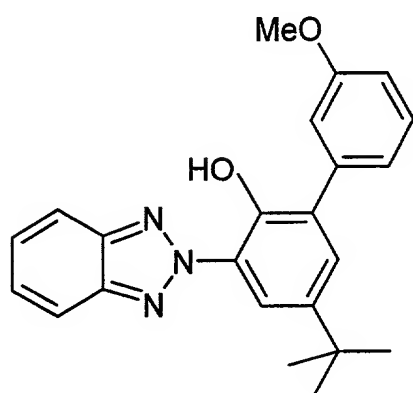
4'-methoxy-5-(1,1,3,3-tetramethyl-butyl)-3-(5-trifluoromethyl-benzotriazol-2-yl)-biphenyl-2-ol,

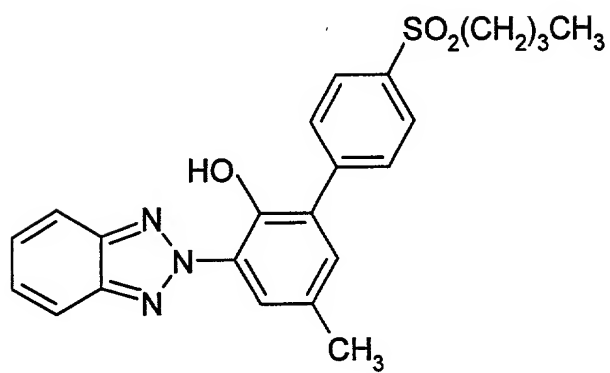
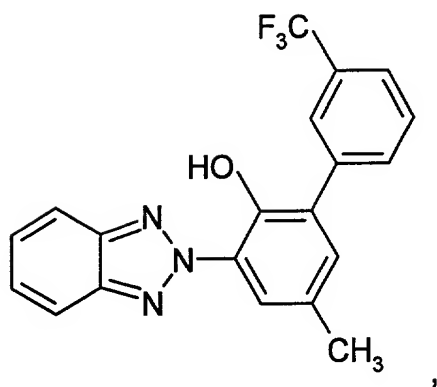
3'-methoxy-5-(1,1,3,3-tetramethyl-butyl)-3-(5-trifluoromethyl-benzotriazol-2-yl)-biphenyl-2-ol,

2'-methoxy-5-(1,1,3,3-tetramethyl-butyl)-3-(5-trifluoromethyl-benzotriazol-2-yl)-biphenyl-2-ol,

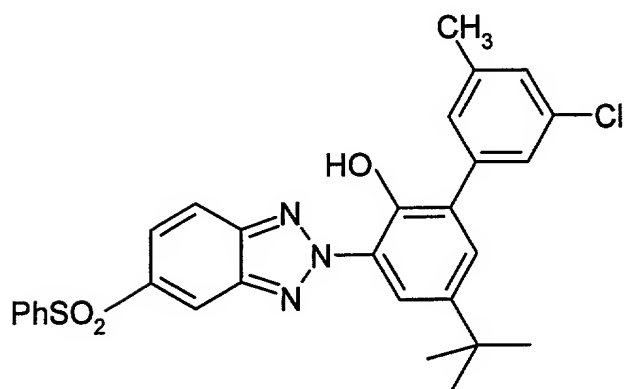
4'-methoxy-5-(1,1,3,3-tetramethyl-butyl)-3-(5-trifluoromethyl-benzotriazol-2-yl)-biphenyl-2-ol,

5-(1,1,3,3-tetramethyl-butyl)-3'-trifluoromethyl-3-(5-trifluoromethyl-benzotriazol-2-yl)-  
biphenyl-2-ol,





or



4. A stabilized composition which comprises

(a) an organic material subject to degradation by heat, light or oxygen, and

(b) an effective stabilizing amount of a compound of formula I, II or III according to claim

1.

5. A composition according to claim 4 wherein component (a) is a thermoplastic polyolefin, polyester, polyester urethane, polyether urethane or a water-borne coating.

6. A composition according to claim 5 wherein component (a) is selected from the group consisting of polypropylene, thermoplastic polyolefin, low density polyethylene, medium density polyethylene, high density polyethylene, linear low density polyethylene, poly(butene-1), ethylene/vinyl acetate copolymer, ethylene/propylene copolymer, copolymers of ethylene or propylene with other alpha-olefins, copolymers of acrylonitrile-butadiene-styrene (ABS), copolymers of acrylonitrile and styrene that are impact modified with ethylene-propylene rubber or ethylene/propylene/alpha-olefin rubber or butyl acrylate rubber, blends of ABS and polycarbonate, blends of ABS and poly(vinyl chloride) (PVC), poly(vinyl chloride), copolymers of styrene and butadiene (HIPS), copolymers of styrene and butadiene that also contain ethylene-propylene rubber or ethylene/propylene/alpha-olefin rubber or butyl acrylate rubber, thermoplastic elastomers and thermoplastic vulcanizates.

7. A composition according to claim 5 wherein component (a) is a polyester or polyether urethane or water-borne coating.

8. A composition according to claim 6 which additionally contains an effective stabilizing amount of at least one coadditive stabilizer selected from the group consisting of the phenolic antioxidants, metal stearates, metal oxides, organophosphorus compounds, furanone antioxidants, hydroxylamines, UV absorbers, non-NOR hindered amines, NOR hindered amines and mixtures thereof.

**9.** A composition according to claim 6 which additionally contains a filler.

**10.** A composition according to claim 9 wherein the filler is calcium carbonate, clay, talc, mica or glass.

**11.** A composition according to claim 6 wherein component (a) is a polyolefin film, fiber or thick section, ABS, high impact polystyrene (HIPS), thermoplastic polyolefin, thermoplastic elastomer or thermoplastic vulcanizate which additionally contains a halogenated flame retardant.

**12.** A composition according to claim 11 wherein the flame retardant is tris[3-bromo-2,2-bis(bromomethyl)propyl] phosphate, decabromodiphenyl oxide, ethylene bis(tetrabromophthalimide) or ethylene bis(dibromonorbornanedicarboximide).

**13.** A composition according to claim 6 wherein component (a) is polypropylene fiber.

**14.** A composition according to claim 6 wherein component (a) is polypropylene, polyethylene or thermoplastic polyolefin (TPO).

**15.** A composition according to claim 14 wherein component (a) is a paintable thermoplastic olefin (TPO).

**16.** A composition according to claim 4 which additionally comprises a coadditive stabilizer which is a hindered phenolic antioxidant selected from the group consisting of neopentetetrayl tetrakis(3,5-di-tert-butyl-4-hydroxyhydrocinnamate, octadecyl 3,5-di-tert-

butyl-4-hydroxyhydrocinnamate, 1,3,5-trimethyl-2,4,6-tris(3,5-di-tert-butyl-4-hydroxybenzyl)-benzene, 1,2-bis(3,5-di-tert-butyl-4-hydroxyhydrocinnamoyl)hydrazine, calcium [bis(monoethyl 3,5-ditert-butyl-4-hydroxybenzyl)phosphonate], 1,3,5-tris(3,5-di-tert-butyl-4-hydroxybenzyl) isocyanurate and 1,3,5-tris(3-hydroxy-4-tert-butyl-2,6-dimethylbenzyl) isocyanurate; or is an organophosphorus stabilizer selected from the group consisting of tris(2,4-di-tert-butylphenyl) phosphite, bis(2,4-di-tert-butyl-6-methylphenyl) ethyl phosphite, 2,2',2''-nitrido[triethyl-tris-(3,3',5,5'-tetra-tert-butyl-1,1'-biphenyl-2,2'-diyl) phosphite], tetrakis(2,4-di-butylphenyl) 4,4'-biphenylenediphosphonite, tris(nonylphenyl) phosphite, bis(2,4-di-tert-butylphenyl) pentaerythrityl diphosphite, 2,2'-ethylidenebis(2,4-di-tert-butylphenyl) fluorophosphite and 2-butyl-2-ethylpropan-1,3-diyl 2,4,6-tri-tert-butylphenyl phosphite; or is 5,7-di-tert-butyl-3-(3,4-dimethylphenyl)-2H-benzofuran-2-one; or is N,N-dialkylhydroxylamine made by the direct oxidation of N,N-di(hydrogenated tallow)amine; or is a hindered amine selected from the group consisting of bis(2,2,6,6-tetramethylpiperidin-4-yl) sebacate, the polycondensation product of 1-(2-hydroxyethyl)-2,2,6,6-tetramethyl-4-hydroxypiperidine and succinic acid, N,N',N'',N'''-tetrakis[4,6-bis(butyl-1,2,2,6,6-pentamethylpiperidin-4-yl)amino-s-triazin-2-yl]-1,10-diamino-4,7-diazadecane, the polycondensation product of 4,4'-hexamethylenebis(amino-2,2,6,6-tetramethylpiperidine) and 2,4-dichloro-6-tert-octylamino-s-triazine, the polycondensation product of 4,4'-hexamethylenebis(amino-2,2,6,6-tetramethylpiperidine) and 2,4-dichloro-6-morpholino-s-triazine, the polycondensation product of 4,4'-hexamethylenebis(amino-1,2,2,6,6-pentamethylpiperidine) and 2,4-dichloro-6-morpholino-s-triazine, 2,2,6,6-tetramethylpiperidin-4-yl octadecanoate, 3-dodecyl-1-(1-acetyl-2,2,6,6-tetramethylpiperidin-4-yl)-pyrrolidin-2,5-dione, 1,3,5-tris{N-cyclohexyl-N-[2-(2,2,6,6-tetramethylpiperazin-3-on-4-yl)ethyl]amino}-s-triazine, poly[methyl 3-(2,2,6,6-tetramethylpiperidin-4-yloxy)propyl]siloxane, the polycondensation product of 2,4-dichloro-6-(2,2,6,6-tetramethylpiperidin-4-yl)butylamino-s-triazine, 2,2'ethylenebis{[2,4-(2,2,6,6-tetramethylpiperidin-4-yl)butylamino-s-triazin-6-yl]aminotrimethyleneamino}, oligomer of N-[[2-(N-2,2,6,6-tetramethylpiperidin-4-yl)butylamino]-s-triazin-4-yl]-N,N'-bis(2,2,6,6-tetramethylpiperidin-4-yl)-1,6-hexanediamine terminated with 2,4-bis(dibutylamino)-s-triazin-6-yl, N,N',N''-tris{2,4-bis[N-(1,2,2,6,6-pentamethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediiminodipropylamine, N,N',N'''-tris{2,4-bis[N-(1,2,2,6,6-pentamethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediiminodipropylamine and N,N',N'',N'''-tetrakis{2,4-bis[N-(1,2,2,6,6-pentamethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediimino-dipropylamine; or is another N-hydrocarbyloxy substituted hindered amines selected from the group consisting of bis(1-octyloxy-2,2,6,6-tetramethylpiperidin-4-yl) sebacate, bis(1-octyloxy-

2,2,6,6-tetramethylpiperidin-4-yl) adipate, bis(1-cyclohexyloxy-2,2,6,6-tetramethylpiperidin-4-yl) adipate, bis(1-cyclohexyloxy-2,2,6,6-tetramethylpiperidin-4-yl) sebacate, 1-cyclohexyloxy-2,2,6,6-tetramethylpiperidin-4-yl octadecanoate, N,N',N''-tris{2,4-bis[N-(1-cyclohexyloxy-2,2,6,6-tetramethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediiminodipropylamine, N,N',N'''-tris{2,4-bis[N-(1-cyclohexyloxy-2,2,6,6-tetramethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediiminodipropylamine and N,N',N'',N'''-tetrakis{2,4-bis[N-(1-cyclohexyloxy-2,2,6,6-tetramethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediiminodipropylamine; or a hydroxy substituted N-hydrocarbyloxy substituted hindered amine selected from the group consisting of bis[1-(2-hydroxy-2-methylpropoxy)-2,2,6,6-tetramethylpiperidin-4-yl] sebacate; a mixture of bis[1-(2-hydroxy-2-methylpropoxy)-2,2,6,6-tetramethylpiperidin-4-yl] glutarate and bis[1-(2-hydroxy-2-methylpropoxy)-2,2,6,6-tetramethylpiperidin-4-yl] adipate; 1-(2-hydroxy-2-methylpropoxy)-4-octadecanoyloxy-2,2,6,6-tetramethylpiperidine; bis[1-(2-hydroxy-2-methylpropoxy)-2,2,6,6-tetramethylpiperidin-4-yl] adipate; bis[1-(2-hydroxy-2-methylpropoxy)-2,2,6,6-tetramethylpiperidin-4-yl] glutarate; bis[1-(2-hydroxy-2-methylpropoxy)-2,2,6,6-tetramethylpiperidin-4-yl] succinate; a mixture of bis[1-(2-hydroxy-2-methylpropoxy)-2,2,6,6-tetramethylpiperidin-4-yl] glutarate and bis[1-(2-hydroxy-2-methylpropoxy)-2,2,6,6-tetramethylpiperidin-4-yl] succinate; 1-(4-octadecanoyloxy-2,2,6,6-tetramethylpiperidin-1-yloxy)-2-octadecanoyloxy-2-methylpropane; 1-(2-hydroxy-2-methylpropoxy)-4-[9-(methoxy-carbonyl)nonanoyloxy]-2,2,6,6-tetramethylpiperidine; 1-(2-hydroxy-2-methylpropoxy)-4-[5-(methoxy-carbonyl)pentanoyloxy]-2,2,6,6-tetramethylpiperidine; 1-(2-hydroxy-2-methylpropoxy)-4-[3-(methoxy-carbonyl)propionyloxy]-2,2,6,6-tetramethylpiperidine; 1-(2-hydroxy-2-methylpropoxy)-4-[4-(methoxy-carbonyl)butyryloxy]-2,2,6,6-tetramethylpiperidine; or is a UV absorber selected from the group consisting of 2-(2-hydroxy-3,5-di- $\alpha$ -cumylphenyl)-2H-benzotriazole, 2-(2-hydroxy-5-methylphenyl)-2H-benzotriazole, 5-chloro-2-(2-hydroxy-3,5-di-tert-butylphenyl)-2H-benzotriazole, 2-(2-hydroxy-3,5-di-tert-amylphenyl)-2H-benzotriazole, 2-(2-hydroxy-3- $\alpha$ -cumyl-5-tert-octylphenyl)-2H-benzotriazole, 2,4-di-tert-butylphenyl 3,5-di-tert-butyl-4-hydroxybenzoate, 2-hydroxy-4-n-octyloxy-benzophenone, 2,4-bis(2,4-dimethylphenyl)-6-(2-hydroxy-4-octyloxyphenyl)-s-triazine, oligomer of N-{2-[(1-propoxy-2,2,6,6-tetramethylpiperidin-4-yl)butylamino]-s-triazin-4-yl}-N,N'-bis(1-propoxy-2,2,6,6-tetramethylpiperidin-4-yl)-1,6-hexanediamine terminated with 2,4-bis(dibutylamino)-s-triazin-6-yl, the condensation product of 2-morpholino-4,6-dichloro-s-triazine with N,N'-bis(1,2,2,6,6-pentamethylpiperidin-4-yl)-1,6-hexanediamine; or mixtures thereof.

**17.** A composition according to claim **16** wherein the coadditive stabilizer is neopentantetrayl tetrakis(3,5-di-tert-butyl-4-hydroxyhydrocinnamate, tris(2,4-di-tert-butylphenyl) phosphite, N,N-dialkylhydroxylamine made by the direct oxidation of N,N-di(hydrogenated tallow)amine, N,N',N'',N'''-tetrakis[4,6-bis(butyl-1,2,2,6,6-pentamethylpiperidin-4-yl)amino-s-triazin-2-yl]-1,10-diamino-4,7-diazadecane, the polycondensation product of 4,4'-hexamethylenebis(amino-2,2,6,6-tetramethylpiperidine) and 2,4-dichloro-6-tert-octylamino-s-triazine, the polycondensation product of 4,4'-hexamethylenebis(amino-2,2,6,6-tetramethylpiperidine) and 2,4-dichloro-6-morpholino-s-triazine, the polycondensation product of 4,4'-hexamethylenebis(amino-1,2,2,6,6-pentamethylpiperidine) and 2,4-dichloro-6-morpholino-s-triazine, oligomer of N-{[2-(N-2,2,6,6-tetramethylpiperidin-4-yl)butylamino]-s-triazin-4-yl}-N,N'-bis(2,2,6,6-tetramethylpiperidin-4-yl)-1,6-hexanediamine terminated with 2,4-bis(dibutylamino)-s-triazin-6-yl, N,N',N''-tris{2,4-bis[N-(1,2,2,6,6-pentamethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediiminodipropylamine, N,N',N''-tris{2,4-bis[N-(1,2,2,6,6-pentamethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediiminodipropylamine and N,N',N'',N'''-tetrakis{2,4-bis[N-(1,2,2,6,6-pentamethylpiperidin-4-yl)butylamino]-s-triazin-6-yl}-3,3'-ethylenediimino-dipropylamine, oligomer of N-{2-[(1-propoxy-2,2,6,6-tetramethylpiperidin-4-yl)butylamino]-s-triazin-4-yl}-N,N'-bis(1-propoxy-2,2,6,6-tetramethylpiperidin-4-yl)-1,6-hexanediamine terminated with 2,4-bis(dibutylamino)-s-triazin-6-yl, or the condensation product of 2-morpholino-4,6-dichloro-s-triazine with N,N'-bis(1,2,2,6,6-pentamethylpiperidin-4-yl)-1,6-hexanediamine.

**18.** A composition according to claim **4** which additionally contains another UV absorber selected from the group consisting of the benzotriazoles, the s-triazines, the oxanilides, the salicylates, the hydroxybenzophenones, the benzoates and the  $\alpha$ -cyanoacrylates.

**19.** A composition according to claim **4** which additionally contains a UV absorber selected from the group consisting of

- (a) 5-trifluoromethyl-2-(2-hydroxy-3- $\alpha$ -cumyl-5-tert-octylphenyl)-2H-benzotriazole;
- (b) 5-trifluoromethyl-2-(2-hydroxy-5-tert-octylphenyl)-2H-benzotriazole;
- (c) 5-trifluoromethyl-2-(2-hydroxy-3,5-di-tert-octylphenyl)-2H-benzotriazole;
- (d) 2,2'-methylene-bis[6-(5-trifluoromethyl-2H-benzotriazol-2-yl)-4-tert-octylphenol];



(e) methylene-2-[4-tert-octyl-6-(2H-benzotriazol-2-yl)phenol]2'-[4-tert-octyl-6-(5-trifluoromethyl-2H-benzotriazol-2-yl)phenol];

(f) 3-(5-trifluoromethyl-2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyhydrocinnamic acid;

(g) methyl 3-(5-trifluoromethyl-2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyhydrocinnamate;

(h) isooctyl 3-(5-trifluoromethyl-2H-benzotriazol-2-yl)-5-tert-butyl-4-hydroxyhydrocinnamate;

(i) 5-trifluoromethyl-2-[2-hydroxy-5-(3-hydroxypropyl)phenyl]-2H-benzotriazole;

(j) 5-trifluoromethyl-2-[2-hydroxy-5-(3-acryloyloxypropyl)phenyl]-2H-benzotriazole;

(k) 5-trifluoromethyl-2-[2-hydroxy-5-(3-methacryloyloxypropyl)phenyl]-2H-benzotriazole;

(l) 5-trifluoromethyl-2-[2-hydroxy-5-(3-acrylaminoethyl)phenyl]-2H-benzotriazole;

(m) 5-trifluoromethyl-2-[2-hydroxy-5-(3-methacrylaminoethyl)phenyl]-2H-benzotriazole;

(n) 5-trifluoromethyl-2-(2-hydroxy-3- $\alpha$ -cumyl-5-tert-butylphenyl)-2H-benzotriazole;

(o) 5-trifluoromethyl-2-(2-hydroxy-3- $\alpha$ -cumyl-5-nonylphenyl)-2H-benzotriazole;

(p) 5-trifluoromethyl-2-[2-hydroxy-3- $\alpha$ -cumyl-5-(2-hydroxyethyl)phenyl]-2H-benzotriazole;

(q) 5-trifluoromethyl-2-[2-hydroxy-3- $\alpha$ -cumyl-5-(3-hydroxypropyl)phenyl]-2H-benzotriazole;

(r) 5-trifluoromethyl-2-(2-hydroxy-3,5-di-tert-amylphenyl)-2H-benzotriazole;

(s) 5-trifluoromethyl-2-(2-hydroxy-3,5-di-tert-butylphenyl)-2H-benzotriazole;

(t) 5-trifluoromethyl-2-(2-hydroxy-3-dodecyl-5-methylphenyl)-2H-benzotriazole;

(u) 5-trifluoromethyl-2-[2-hydroxy-3-tert-butyl-5-(3-hydroxypropyl)phenyl]-2H-benzotriazole;

(v) 5-trifluoromethyl-2-[2-hydroxy-3-tert-butyl-5-(2-hydroxyethyl)phenyl]-2H-benzotriazole;

(w) 5-trifluoromethyl-2-[2-hydroxy-5-(2-hydroxyethyl)phenyl]-2H-benzotriazole;

(x) 5-trifluoromethyl-2-(2-hydroxy-3,5-di- $\alpha$ -cumylphenyl)-2H-benzotriazole;

(y) 5-fluoro-2-(2-hydroxy-3,5-di- $\alpha$ -cumylphenyl)-2H-benzotriazole;

(z) 5-butylsulfonyl-2-(2-hydroxy-3,5-di- $\alpha$ -cumylphenyl)-2H-benzotriazole;

(aa) 5-butylsulfonyl-2-(2-hydroxy-3,5-di-tert-butylphenyl)-2H-benzotriazole;

(bb) 5-butylsulfonyl-2-(2-hydroxy-3,5-di-tert-octylphenyl)-2H-benzotriazole; and

(cc) 5-phenylsulfonyl-2-(2-hydroxy-3,5-di-tert-butylphenyl)-2H-benzotriazole.

**20.** A composition according to claim 4 which is a stabilized stoving lacquer wherein component (a) is an acid catalyzed resin based on hot crosslinkable, acrylic, acrylic melamine, polyester, polyurethane, polyamide or alkyd resin.

**21.** A composition according to claim 20 which additionally contains a UV absorber.

**22.** A composition according to claim 20 which is an enamel of high solids content for industrial finishes.

**23.** A composition according to claim 22 which is a finishing enamel for automobiles.

**24.** A composition according to claim 4 which is a stabilized ambient curable composition wherein component (a) is a resin selected from the group consisting of unmodified or modified alkyd resin, acrylic resin, acrylic alkyd resin, polyester resin or crosslinkable epoxide resin.

**25.** A composition according to claim 24 wherein the resin is selected from the group consisting of unmodified alkyl, acrylic, acrylic alkyd or polyester resins; said resins modified with silicon, isocyanates, isocyanurates, ketimines or oxazolidines; crosslinked epoxy resins; and epoxy-crosslinked acrylic and polyester resins.

**26.** A composition according to claim 25 which is an enamel of high solids content for industrial finishes.

**27.** A composition according to claim 26 which is a finishing enamel for automobiles.

**28.** A composition according to claim 27 which is a curable electrocoat composition wherein component (a) is an amino-group containing resin having functional groups that are reactive with an isocyanate and an aromatic polyisocyanate crosslinking agent.

**29.** A composition according to claim 4 which is a non-gelling liquid coating composition wherein component (a) comprises (A) at least one acrylic monomer, (B) silica and (C) at least one initiator for ultraviolet radiation-induced curing of said composition.

**30.** A composition according to claim 29 which contains a silyl acrylate, a polyfunctional acrylate, silica and a photoinitiator.

**31.** A composition according to claim 4 wherein component (a) is a polyolefin, polycarbonate, a styrenic, ABS, a nylon (polyamide), a polyester, a polyurethane, a polyacrylate, a rubber modified styrenic, poly(vinyl chloride), poly(vinyl butyral), polyacetal (polyoxymethylene), or other blends or copolymers such as poly(ethylene/1,4-cyclohexylene-dimethylene terephthalate) PETG or an ethylene/acrylic acid copolymer or salts thereof (an ionomer).

**32.** A composition according to claim 31 wherein the polymer is a polyester or a polyacrylate.

**33.** A composition according to claim 32 wherein the polyester is poly(ethylene terephthalate), poly(butylene terephthalate) or poly(ethylene naphthalenedicarboxylate), or copolymer poly(ethylene/1,4-cyclohexylenedimethylene terephthalate) PETG.

**34.** A composition according to claim **4** wherein component (a) is a thermoplastic polymer.

**35.** A composition according to claim **34** wherein the polymer is a polyolefin or polycarbonate.

**36.** A composition according to claim **35** wherein the polymer is polyethylene or polypropylene.

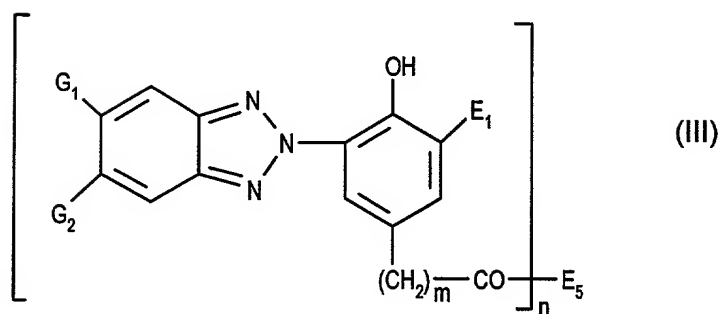
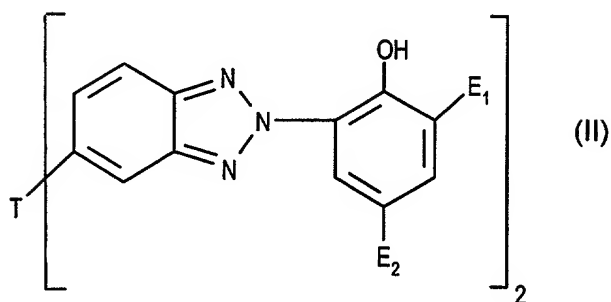
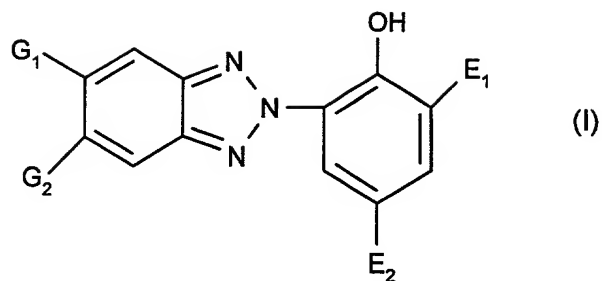
**37.** A composition according to claim **4** wherein component (a) is a photographic composition.

**38.** A composition according to claim **35** wherein the polymer is polycarbonate.

**39.** A composition according to claim **32** wherein the polymer is a polyacrylate.

**40.** A composition according to claim **39** wherein the polyacrylate is poly(methyl methacrylate).

**41.** A process for the preparation of a compound of formula I, II or III according to claim



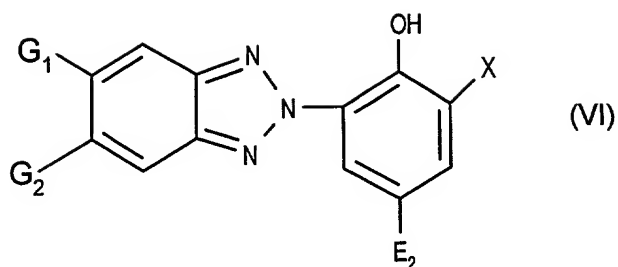
where  $E_1$  is a group of the formula V,

which process comprises reacting an arylboronic acid or ester of formula



where  $E_1$  is a group of the formula V,  $R_1$  and  $R_2$  are independently hydrogen, alkyl of 1 to 12 carbon atoms, or  $R_1$  and  $R_2$  together are alkylene of 2 to 4 carbon atoms;

with a benzotriazole of formula VI



where X is chloro, bromo or iodo, or tosylate,

in the presence of an effective amount of a palladium (II) catalyst at a temperature between 10 to 100°C.

42. A process according to claim 41 wherein X is bromo.

43. A process according to claim 41 wherein the reaction is carried out at a temperature between 50 to 95°C.

44. A process according to claim 41 wherein the amount of palladium (II) catalyst is 0.01 to 100 mol percent.

45. A process according to claim 41 wherein additionally a ligand is present.

46. A process according to claim 45 wherein the ligand is triphenylphosphine, 2-(di-tert-butylphosphino)biphenyl, 1,1'-bis[2,4,8,10-tetrakis(tert-butyl)-dibenzo[d,f][1,3,2]dioxaphosphin-6-yl]ferrocene, tris(2,4-di-tert-butylphenyl) phosphite or 2,2',2''-nitrilo[triethyl-tris(3,3',5,5'-tetra-tert-butyl-1,1'biphenyl-2,2'-diyl)phosphite].

**47.** A process according to claim **46** wherein the ligand is triphenylphosphine.

**48.** A process according to claim **41** wherein the process is an anhydrous process with dioxane as solvent and potassium fluoride as a base.

**49.** A process according to claim **41** wherein the process is carried out using n-propanol or isopropanol as solvent with a small amount of water present and aqueous sodium carbonate as base.

**50.** A process according to claim **41** in which the benzotriazole of formula VI is 2-chloro-4-(1,1,3,3-tetramethyl-butyl)-6-(5-trifluoromethyl-benzotriazol-2-yl)phenol.